FalconStor Software

What's new in Virtual Tape Library (VTL) Enterprise Edition v5

FalconStor® Virtual Tape Library (VTL) provides high-performance enterprise-level disk-based data protection and integrated global data de-duplication to optimize storage and bandwidth utilization. Robust media management simplifies tape management and enhances tape security. Offering multi-node scalability, FalconStor VTL emulates vast arrays of tape libraries, drives, and cartridges, ensuring complete backup transparency. By enabling companies to keep backup data on disk, FalconStor VTL significantly improves the speed and dependability of recovery.

New features

Multi-node management and architecture

With FalconStor VTL, up to 8 nodes may be managed as a single group through group policies and group reports. The group can consist of a combination of high availability (HA) pairs of nodes and standalone nodes. This helps an organization's IT staff to be more productive and manage the VTL environment more easily. The following features are included:

> **Single sign-on:** One user id/password can be used to log into all nodes that are part of a multi-node group.

> **Consolidated user management:** Users can be added/deleted at the group level.

> **Consolidated reporting:** A single report is generated for all nodes in a group. This greatly simplifies management of very large configurations.

> **Common configuration settings:** A single point of management at the group level greatly reduces initial setup tasks and simplifies ongoing configuration adjustments, even in large-scale deployments. The following configuration settings can be done at the group level and applied to all member nodes:

- SNMP settings
- Storage monitoring trigger threshold
- Tape caching migration and reclamation thresholds
- SW/HW compression settings
- X-rays

Tape consolidation

Allows users to write multiple virtual tapes to a single physical tape of greater capacity. Tape consolidation effectively reduces IT management costs and tape capacity requirements, eliminating wasteful space consumption on new, higher-capacity tapes.

Tape shredding

For security and regulatory compliance, shredding enables users to "destroy" a virtual tape so that it cannot be accessed, even if using disk forensics. Shredding performs a three-pass wipe of the selected virtual tapes using an algorithm specified by the U.S. Department of Defense (Standard 5220.22-M).

Multi-tape export

Enables users to make multiple physical copies of virtual tapes (up to five) for offsite disaster recovery (DR) and/or to meet regulatory requirements. Multi-tape export may be set as part of automated tape caching or auto archive policy; or it can occur during manual export of a single tape. Multi-tape export increases IT productivity, eliminating the need for manual tape duplication or scripting.

Export to physical tape via NDMP v4

Allows certified backup applications and industry-standard NAS appliances to back up to, and restore from, the VTL using NDMP protocol over an IP network for both command and data flow.

Symantec OpenStorage API Support

FalconStor VTL is the industry's first VTL to integrate with Symantec OpenStorage using APIs. This will give NetBackup 6.5 users direct access to FalconStor VTL functions (capacity, de-duplication, replication, and others) through the NetBackup management console.

> Certification pending

> Allows for intelligent use of backup capacity

- NetBackup can age backup images independent of media
- NetBackup will free up backup images when no longer needed

> NetBackup is aware of de-duplication capacity

> NetBackup can perform partial restore without the need to "read-past" unneeded data in large backup sets

> NetBackup aware of replication of backup images to remote sites

Enhancements to existing features

Next generation data de-duplication

FalconStor VTL features a fully-integrated option for next-generation data de-duplication, called Single Instance Repository (SIR). De-duplication via SIR dramatically reduces the storage footprint required for a given amount of data as well as the bandwidth required to move it from one site to another. SIR reads the virtual tape cartridges, determines their format, calculates a unique data identifier for each piece of data, and stores a single copy of each unique piece. The original virtual tape cartridge is replaced by a virtual index tape containing the backup metadata and pointers to the unique pieces of data that comprised the original. The virtual index tape is typically only 1/100 the size of the original virtual tape cartridge. De-duplication is performed post-process, after the backup completes, to optimize storage efficiency without affecting the backup window.

Global, clustered de-duplication architecture

FalconStor de-duplication offers clustering with an N+1 failover architecture. Multiple de-duplication appliances can be virtualized as one, providing linearly scalable throughput and processing power. If one fails, the standby system will automatically take over its workload to ensure continuity. All notes within the cluster maintain single de-duplication repositories, such that a unique block is never stored in more than one node. The cluster maintains a single hash table, so it does not compromise the de-duplication ratio.

For large organizations with multiple remote sites, global de-duplication enables efficient centralized data consolidation. FalconStor VTL enables remote replication for DR through an existing WAN. By replacing traditional manual transportation with network transfer and data encryption, FalconStor VTL lowers tape management costs and the risks of data loss. In the process of remote replication, only unique data blocks are replicated to the remote site, reducing network traffic by as much as 95% based on a 20:1 de-duplication ratio.

FalconStor VTL supports both one-to-one and many-to-one replication configurations to enable tape infrastructure consolidation at the data center. With VTL Storage Appliances deployed at each site, virtual tapes can be replicated via WAN to the data center, where VTL aggregates the data into a clustered repository of globally unique data. At each site, VTL Storage Appliances perform de-duplication by checking if the same data blocks exist at the data center, replicating only unique data. Since identical data often exists at multiple sites, VTL Storage Appliances offer global de-duplication to further reduce network traffic and DR costs. Once data is at the data center, the appliance can migrate it to physical tape for archival or compliance purposes.

Tape caching

This lets you set up policies that will automatically trigger the export to physical tape. Files can be restored from either the virtual or physical tape copy. The operation is totally transparent to the backup software so there is no impact to existing policies. Enhancements include direct-link allocation to physical tapes, customizable manual migration, and a reclamation option to prevent accidental deletion from physical tape.

Hardware compression

FalconStor VTL now supports Hifn Express DR 600 and Hifn Express DR 1000 hardware compression boards. Hifn uses PCI Express and offers up to 600 MB/sec of compression and decompression for the DR 1000 card.

Backup software support

In addition to the existing backup software supported in v4, this release also supports the following backup applications:

> CA ARCserve 11.5
> CommVault Galaxy/Simpana 7.0
> EMC Legato Networker 7.3
> HP Data Protector 6.0
> Microsoft System Center Data Protection Manager (DPM) 2007
> Symantec NetBackup 6.5 (includes NDMP v4)
> Symantec BackupExec 10.1, 11d

Increased scalability

FalconStor VTL Enterprise Edition can be configured with up to 8 nodes supporting up to 512,000 virtual tapes.

> Up to 128 virtual tape libraries per node
> Up to 1,024 virtual tape drives per node
> Up to 65,536 virtual tapes per node

New supported libraries

> ADIC Scalar 10K, i500
> HP MSL 2024, 4048. 8096, 5052
> Overland NEO 8000
> Quantum PX510, PX720
> Sun StorageTek L700e, L1400m
> Spectra Logic T950

New supported drives

> IBM TS1120
> IBM LTO4 (no encryption)
> HP LTO4 (no encryption)
> Quantum DLT-S4
> Quantum SDLT600
> Sun StorageTek T10000A

Replication with tape caching

With VTL, an automated tape caching policy and replication policy may be set on the same virtual tape. You can migrate to physical tape and then replicate it to a remote site, or you can replicate it to a remote site and then migrate it to physical tape at the original site, all as part of the same policy.

Incremental export

The incremental export feature optimizes the migration to tape process by reducing the amount of data moved to physical tape whenever possible. If a virtual tape is migrated to the same physical tape to which it was migrated previously, only the modified data will be exported. Both manual export and tape caching operations will benefit from this feature.

Enhanced job queue

To accommodate the increased number of jobs in the queue, jobs are displayed in the same way that virtual tapes are displayed – in the right pane of the screen. When a job is highlighted, the lower part of the screen displays the details of the job. You can cancel, hold, resume, restart a failed job, or delete a job directly from the right pane for one or more jobs.

Command Line Interface (CLI) for import/export

The command line utility has been enhanced to support import/export operations. All import/export operations available in the console are supported from the command line.

Reports

The following enhancements have been made to the reporting feature:

> A variety of reports, including LUN virtual tape, physical tape usage, and SIR reports, can be scheduled to run at regular intervals
> Reports can be exported in PDF, HTML, and Excel formats, in addition to CSV and text
> Reports can be emailed automatically after they are generated
> Properties can be set to specify your SMTP configuration and define how long reports should be retained

IBM 3494 integration

Users no longer need to create a category of tapes before configuring an IBM 3494 system with VTL. Instead, VTL software automatically creates the category for the user, who then assigns tapes to the category.

Configuration changes

> Operating system
- Red Hat Enterprise Linux and CentOS, 64-bit versions
- Upgrade paths from all GA systems

> LUN capacity
- Each LUN can now address up to 8TB of storage

> Firewall support for ACSLS
- Both the VTL and the ACSLS server are firewall-friendly

> No disk allocation for initial segment
- VTL does not allocate disk space to virtual tapes until they are first loaded into a virtual drive
- Many virtual tapes can be created quickly with almost no disk capacity required

> IPMI failover power-down
- Unresponsive failover appliances can be automatically shut down via IPMI

Specifications

Host interfaces	Support 4Gb/sec Fibre Channel (FC), 1Gb/sec iSCSI connections
Performance	Throughput maximum 1,200MB/sec per node; 2,400 per HA pair
High availability (HA)	VTL HA up to 4 pairs (8 nodes), SIR cluster up to 4 nodes
Virtual devices	Up to 128 virtual libraries, 1024 virtual drives, 65,536 virtual cartridges per VTL node
Tape library emulation	ADIC Scalar 100/1000/i2000, ATL P1000/P3000/P4000/P7000/P7100/M1500/M1800, HP ESL9000/EML E-series, IBM 3494/3584L32/3590E11/3590B11/3583TL, Overland Rio 4000/Neo 4100/Neo 8000, Quantum PX510/PX720, Sony CSM-200, Sun StorageTek L20/L40/L80/L180/L700/L1400/9710/9714/9730/SL500, Spectra Gator 12000/20000/64000
Tape drive emulation	HP Ultrium-1/2/3/4, IBM ULTRIUM-TD1/2/3/4, IBM 3590E1A/B1A/E11/B11, IBM TS1120, Quantum DLT7000/DLT8000/ SDLT1/SDLT600/DLT-S4, StorageTek 9840/T9840B/ 9940A/9940B/ T10000, SONY AIT-1/AIT-2/AIT-3/SDZ-100/SDZ-130
Backup software support	Atempo TimeNavigator, BakBone NetVault, CA ARCserve Backup, CommVault Galaxy/Simpana, EMC Legato Networker, HP DataProtector, IBM TSM, Microsoft DPM 2007, Symantec NetBackup & Backup Exec, Yosemite TapeWare

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